

# **Operation of a Strong Ground Motion Array in the New Madrid Seismic Zone**

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Jiakang Xie, Douglas Johnson and John Armbruster  
Lamont-Doherty Earth Observatory of  
Columbia University  
61 Route 9W  
Palisades, NY 10964

(845)365-8553 (phone)

(845)365-8150 (fax)

xie@ldeo.columbia.edu (email)

<http://www.ldeo.columbia.edu/cgi-bin/strongmo-cgi-bin> (URL)

## **Program Element: I**

**Key Words:** Strong ground motion, Engineering seismology, New Madrid Seismic Zone, Wave propagation.

## **Investigations Undertaken**

This is an operational project for maintaining the Lamont-Doherty Earth Observatory (LDEO) strong motion network in the New Madrid Seismic Zone, and for data collection. While data collection continued via phone lines, there has been no field trip during the report time period. A major effort has been made to archive the data recorded by the network in 1995-2000.

## **Result**

A new data set has been archived for twenty-four events between May, 1995 and May, 2000 in the NMSZ. This data set is available to the public via ftp. The website for retrieving this new data is :

" [http://www.ldeo.columbia.edu/cgi-bin/strongmo-cgi-bin/smdb\\_startStrongmo.pl](http://www.ldeo.columbia.edu/cgi-bin/strongmo-cgi-bin/smdb_startStrongmo.pl) "  
(click on "New Madrid Seismic Zone Data 1995-2000: NMSZ\_DATA\_95\_00.tar.gz").  
Earlier data from this network, under a data structure known as "strongmo", is also available at the website. Tables 1 and 2 list station and event parameters involved for the new data.

Under the constraint of funding level, this new data set is only made available as a gzipped Unix tar file. Users need to gunzip it and tar it on a Unix machine. The data files are in \*.ah format. The total size of the tar file is about 1.3 Mb after compression.

**Table 1.** LDEO NMSZ strong motion stations in the new data \*

Station abbreviation	Latitude ° N	Longitude ° W	Elevation (M)	Instrument type
BROS	36.6767	90.2450	29	SSA-2
FTPL	35.6533,	89.8350	117	SSA-1
HNBK	36.3335	89.3027	140	SSA-1
MTAR	35.5453	90.3922	67	SSA-2
OLAP	37.5858	89.7055	180	SSA-1
RITN	36.2642	89.4806	87	K2
YBAR	35.9815	89.9112	77	SSA-2
TRIM	36.202	89.174	94	SSA-2

\* Data from more stations may be retrieved later.

**Table 2.** Events recorded between May, 1995 and May, 2000 \*

Event Date	Origin (H:M:S)	Latitude, ° N	Longitude, ° W	Depth km	Magnitude	No. of stations †
1995/05/27	19:51:10.00	36.17	89.43	6.4	3.0	4
1995/06/06	21:27:11.00	36.22	89.47	5.0	3.1	2
1995/06/28	06:28:**.**	*	*	*	*	1
1995/08/25	00:50:11.00	36.19	89.46	5.3	2.5	1
1995/09/13	05:54:46.00	36.10	89.86	5.4	2.4	1
1996/04/04	23:55:05.00	35.52	90.5	9.9	3.0	1
1996/10/13	11:11:24.00	35.88	89.91	8.3	2.5	1
1996/11/29	05:41:33.00	35.91	89.92	20.5	4.3	4
1996/11/29	10:47:09.00	36.29	89.37	10.0	3.4	1
1996/12/15	07:19:57.00	36.03	89.84	4.4	2.8	1
1997/03/07	23:38:58.00	36.26	89.51	7.5	2.0	1
1997/08/21	19:29:35.00	35.99	89.85	13.6	2.3	1
1997/09/27	12:14:11.00	36.19	89.42	6.6	2.9	1
1998/02/12	09:37:49.00	36.14	89.71	9.6	3.0	1
1998/12/06	12:56:**.**	*	*	*	*	1
1998/12/27	19:34:**.**	*	*	*	*	1
1999/03/16	13:10:57.00	36.23	89.41	10.1	2.0	1
1999/08/23	12:12:41.00	36.26	89.50	9.0	3.1	1
1999/10/21	08:18:**.**	*	*	*		1
1999/10/30	12:18:**.**	*	*	*		1
2000/01/07	21:07:00.00	36.29	89.50	8.8	1.7	1
2000/01/26	00:21:00.00	36.22	89.40	8.3	2.6	1
2000/05/13	09:57:15.00	36.255	89.466	9.2	2.4	1
2000/05/25	02:23:06.00	36.308	89.495	5.2	1.8	1

\* event parameters are from the CERI, U. of Memphis catalog.

† number of strong motion stations recording the event.

The new and previous data can be used by seismologists and engineers, in studies of source characteristics, wave propagation and attenuation, and features of high-frequency ground motions in the NMSZ, including the Mississippi embayment.

### **Non-technical Summary**

A new strong motion data for twenty-four events between 1995 and 2000 in the New Madrid Seismic Zone (NMSZ) is now available. The data was recorded by the strong motion network operated by Lamont-Doherty Earth Observatory (LDEO) of Columbia University. Magnitudes of the events range between about 1.7 and 4.0. The data set can be retrieved at the following website (URL):

[http://www.ldeo.columbia.edu/cgi-bin/strongmo-cgi-bin/smdb\\_startStrongmo.pl](http://www.ldeo.columbia.edu/cgi-bin/strongmo-cgi-bin/smdb_startStrongmo.pl) .

Data from events prior to 1995 can also be retrieved at the web-site. The data set can be used by seismologists and engineers to study source characteristics, wave propagation and attenuation, and features of high-frequency ground motions in the NMSZ, including the Mississippi embayment.

### **Report published**

None.

### **Database**

The new data generated by this project can be retrieved at the following website:  
"http://www.ldeo.columbia.edu/cgi-bin/strongmo-cgi-bin/smdb\_startStrongmo.pl " .

The data volume is assembled in a Unix tar file (gzipped), with data files in \*.ah format. A README file explains details. Questions regarding the data should be directed to John Armbruster (armb@ldeo.columbia.edu), Doug Johnson (dhj@ldeo.columbia.edu), or Jiakang Xie (xie@ldeo.columbia.edu).